

Put worksheets on desk  
and get projects organized with your  
groups!

2-7 Proving Segment Relationships

2-8 Proving Angle Relationships

**DO NOT WRITE!**

Postulate 2.8--Ruler Postulate--points on any line/segment, can  
be paired with any real number

Postulate 2.10--Protractor Postulate--An angle can be positioned so  
that one ray ends with 0 and the other is between 0 and 180.

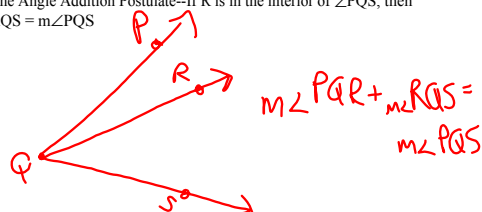
Postulate 2.9--The Segment Addition Postulate--If B is between A and C, and  
A, B, and C are collinear, then  $AB + BC = AC$

S.A.P.



Postulate 2.11--The Angle Addition Postulate--If R is in the interior of  $\angle PQS$ , then  
 $m\angle PQR + m\angle RQS = m\angle PQS$

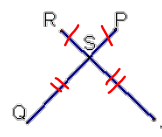
AA.P.



Example 1

Given:  $RS = PS$ ,  $ST = SQ$

Prove:  $RT = PQ$



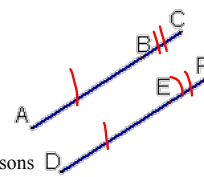
Statements	Reasons
① $RS = PS$ $ST = SQ$	① Given
② $RS + ST = PS + SQ$	② Addition
③ $RS + ST = RT$ $PS + SQ = PQ$	③ S.A.P.
④ $RT = PQ$	④ Substitution

Example 2

Given:  $LM = NO$ Prove:  $\overline{LN} \cong \overline{MO}$  $+MN$ 

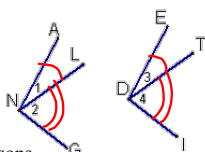
Statements	Reasons
① $LM = NO$	① Given
② $MN = MN$	② Reflexive
③ $LM + MN = MN + NO$	③ Addition
④ $LM + MN = LN$ $MN + NO = MO$	④ SAP
⑤ $LN = MO$	⑤ Subst.
⑥ $\overline{LN} \cong \overline{MO}$	⑥ def of $\cong$

DO:

Given:  $AB = DE$ ;  $BC = EF$ Prove:  $AC = DF$ 

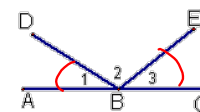
Statements	Reasons
① $AB = DE$ $BC = EF$	① Given
② $AB + BC = DE + EF$	② Add.
③ $AB + BC = AC$ $DE + EF = DF$	③ SAP
④ $AC = DF$	④ Subst.

EXAMPLE 4:

Given:  $m\angle 1 = m\angle 3$ ;  $m\angle 2 = m\angle 4$ Prove:  $m\angle ANG = m\angle EDI$ 

Statements	Reasons
① $m\angle 1 = m\angle 3$ $m\angle 2 = m\angle 4$	① Given
② $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	② Add.
③ $m\angle 1 + m\angle 2 = m\angle ANG$ $m\angle 3 + m\angle 4 = m\angle EDI$	③ A.A.P.
④ $m\angle ANG = m\angle EDI$	④ Subst.

EXAMPLE 5:

Given:  $m\angle 1 = m\angle 3$ Prove:  $m\angle ABE = m\angle DBC$ 

Statements	Reasons
① $m\angle 1 = m\angle 3$	① Given
② $m\angle 2 = m\angle 2$	② Refl.
③ $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 2$	③ Add.
④ $m\angle 1 + m\angle 2 = m\angle ABE$ $m\angle 3 + m\angle 2 = m\angle DBC$	④ AAP
⑤ $m\angle ABE = m\angle DBC$	⑤ Subst.